GUIDE TO THE

TWENTY-FOURTH ANNUAL FIELD CONFERENCE

OF THE

SECTION OF GEOLOGY

OF THE

OHIO ACADEMY OF SCIENCE

APRIL 23 AND 24, 1949

A STUDY OF THE

GEOLOGY OF PERRY COUNTY

SECTION CHAIRMAN

Myron T. Sturgeon
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CONFERENCE GUIDE

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GENERAL OUTLINE OF THE FIELD TRIP

The field party will assemble at Hebron on U.S.Route 40 at 8:45 a.m., Saturday, April 23. Following an inspection of a Massillion sandstone quarry near Glenford, the group will visit the plant of the Central Silica Company at Glassrock. On Saturday afternoon, the Pottsville section will be studied in a gully in northeastern Perry County. An interesting drainage change will also be pointed out there. Allegheny and Conemaugh strata will be seen south of Crooksville in a road cut exposure. The party will arrive in New Lexington at about 6 o'clock and will stay overnight there.

Sunday morning, the extensive open pit operations of the Sunnyhill Coal Company north of New Lexington will be inspected. The trip will then continue into the southeastern part of the county where the highest part of the column (Middle Conemaugh) will be seen. The latter part of Sunday morning and early Sunday afternoon will be spent in western Perry County. Included in the geology of this region is the type locality of the Maxville limestone, an interesting exposure of the Mississippian-Pennsylvanian contact, the sites of two Wisconsin glacial lakes and an associated drainage change, as well as the Wisconsin terminal moraine at Thornport. The trip will end in the vicinity of Thornport at about 4:00 p.m.

GENERAL INFORMATION

MEETING PLACE, SATURDAY, APRIL 23

The field party will assemble at 8:45 a.m. on U.S.Route 40 west of the traffic light in the village of Hebron. The group will leave Hebron at 9:00 o'clock. Anyone arriving later than that can join the party at the Central Silica Company sandstone quarry (cen.sec.9, Hopewell Twp.), or at the Central Silica Company plant at Glassrock.

MEETING PLACE, SUNDAY, APRIL 24

Sunday morning the group will leave from the Park Hotel in New Lexington at 8:30. Latecomers may join the party at the stripping operations of the Sunnyhill Coal Company at Rehoboth, 2 miles north of New Lexington.

LUNCHES

Everyone should bring a lunch on both Saturday and Sunday, for the group will not be near a suitable eating place at lunch time on either day. Lunches can be obtained at the Park Hotel in New Lexington on Sunday by those who remain overnight.

APPAREL

Part of the column will be studied in a gully, so come equipped to walk in such terrian.

ARRANGEMENT OF THE GUIDE

This guide contains measured stratigraphic sections of the rock units which will be studied. Also, a brief statement is given about some geologic phenomena that will be seen en route. These descriptions are arranged in the order of appearance of the various features. A bibliography appears on the last page of the guide.

PREPARATION OF THE GUIDE

This guide has been compiled by Norman K. Flint. The data included in it, unless otherwise indicated, are those collected by Mr. Flint while employed by the Geological Survey of Ohio. No part of the guide should be published without the consent of the Geological Survey of Ohio. Various members of the Geological Survey aided in the preparation, and the mimeographing was done at the offices of the Ohio Water Resources Board.

GEOLOGIC MAP

A geologic map of Perry County, published recently by the Geological Survey of Ohio, will be given each person at the beginning of the field trip Saturday morning.

SATURDAY, APRIL 23

HEBRON TO PERRY COUNTY LINE

Pre-glacial valley

The village of Hebron lies in a broad valley which was cut by the so-called Groveport River of the Teays drainage system and by the Newark River of the Deep Stage drainage system. The Teays system was developed prior to any glaciation in Ohio and the Deep Stage system was present prior to the advance of the Illinoian ice, but after the advance of a previous ice sheet. (Stout, 1943, pp. 51-106)

The Newark River flowed southwest past Hebron through Canal Winchester to Chillicothe and there turned and flowed southward to join a westerly flowing stream in Scioto County of southern Ohio. The Newark River Valley at Hebron is now filled with glacial drift of both Illinoian and Wisconsin ages. The drift is about 300 feet thick at Hebron.

Mantle and bedrock

East of Hebron, the surface rock is glacial till of Wisconsin age. The few bedrock exposures present are the Vinton sandstone and shale, the highest member of the Mississippian Logan formation. The Vinton is also the youngest unit of the Waverly "series", a "series" which includes clastic beds from the Bedford shale up through the Vinton.

PERRY COUNTY LINE TO CENTRAL SILICA COMPANY QUARRY

Pre-glacial valley

Buckeye Lake, whose east end can be seen at Thornport, lies in a Deep Stage valley which was tributary to the Newark River valley. This tributary joined the Newark River just south of Hebron. The pre-Illinoian headwaters of the tributary stream were in the northeast corner of Perry County in sec. 15, Madison Twp. At the site of the divide which was once present in that region, there is now a 200-foot gorge (Jonathon Creek gorge) which was cut when the drainage was reversed as the result of damming of an westerly flowing stream by the advancing Illinoian ice. This gorge will be visited later in the morning.

Note that the drive from Thornville eastward to Glenford is down Jonathon Creek valley. Pre-Illinoian, this would have been an up-valley drive.

Terminal moraine

About a mile east of Thornville on Route 204, there is a good view of the Wisconsin terminal moraine which trends north-south across Jonathon Creek valley. The rounded hills from 40 to 80 feet high in secs. 3 and 10, Thorn Twp., are part of this moraine. The moraine will be examined by the field party Sunday afternoon.

Bedrock exposures along Route 204

All bedrock exposures at road level along Route 204 are Vinton.

Oil and gas field information

For information concerning oil and gas fields, see pages 8, 9 and 10.

CENTRAL SILICA COMPANY QUARRY (cen.sec.9, Hopewell Twp.)

General Statement

The Massillon sandstone is quarried for glass sand by the Central Silica Company, Zanesville, Ohio. This sandstone was originally thought to be Sharon, the basal member of the Pennsylvanian system (excepting the Harrison formation), because it lies directly on the Mississippian Vinton member and is lithologically similar to the Sharon sandstone. Detailed stratigraphic study has revealed, however, that the sandstone is Massillon, not Sharon.

Illinoian erratics

Several igneous boulders left by the Illinoian ice are present in the mantle above the sandstone at the quarry.

Stratigraphic section at quarry	Ft.	In.
Pennsylvanian System		
Pottsville Series		
Middle Mercer (?) cyclothem		
16. Clay, gray, sandy	1	0
15. Shale, sandy; with weathered nodules of limonite	15	2
Lower Mercer cyclothem		
14. Siderite, BOGGS, somewhat weathered to limonite	0	4
Sandstone and shale, LOWER MERCER (27'0")		
13. Shale, clayey	4	0
12. Sandstone, medium-grained; with clay bond	3	0
11. Shale, gray to brown	24	0
Bear Run cyclothem		
Coal, BEAR RUN (4'0")		
10. Coal, bright	2	6
9. Coal, bony	1	6
8. Clay, BEAR RUN, Sandy	3	4
Sandstone and shale, MASSILLON (23'8")		
7. Shale, sandy	5	8
6. Sandstone, light gray to white, coarse-grained, cross-bedded, in beds averaging 1 foot in thickness, slightly ferruginous	18	0
Harrison formation		
5. Conglomerate, HARRISON, with matrix of clay and quartz sand, cemented by pyrite	1	0
Disconformity		
Mississippian System		
Osage Series		
Logan formation		
Sandstone and shale, VINTON (13'6")		
4. Sandstone, fine-grained, thin-bedded, contains scattered specks of hematite	2	0
3. Shale, somewhat clayey	5	0
2. Covered	4	0
1. Sandstone, light gray, fine-grained	2	6
Elevation, 935 feet		

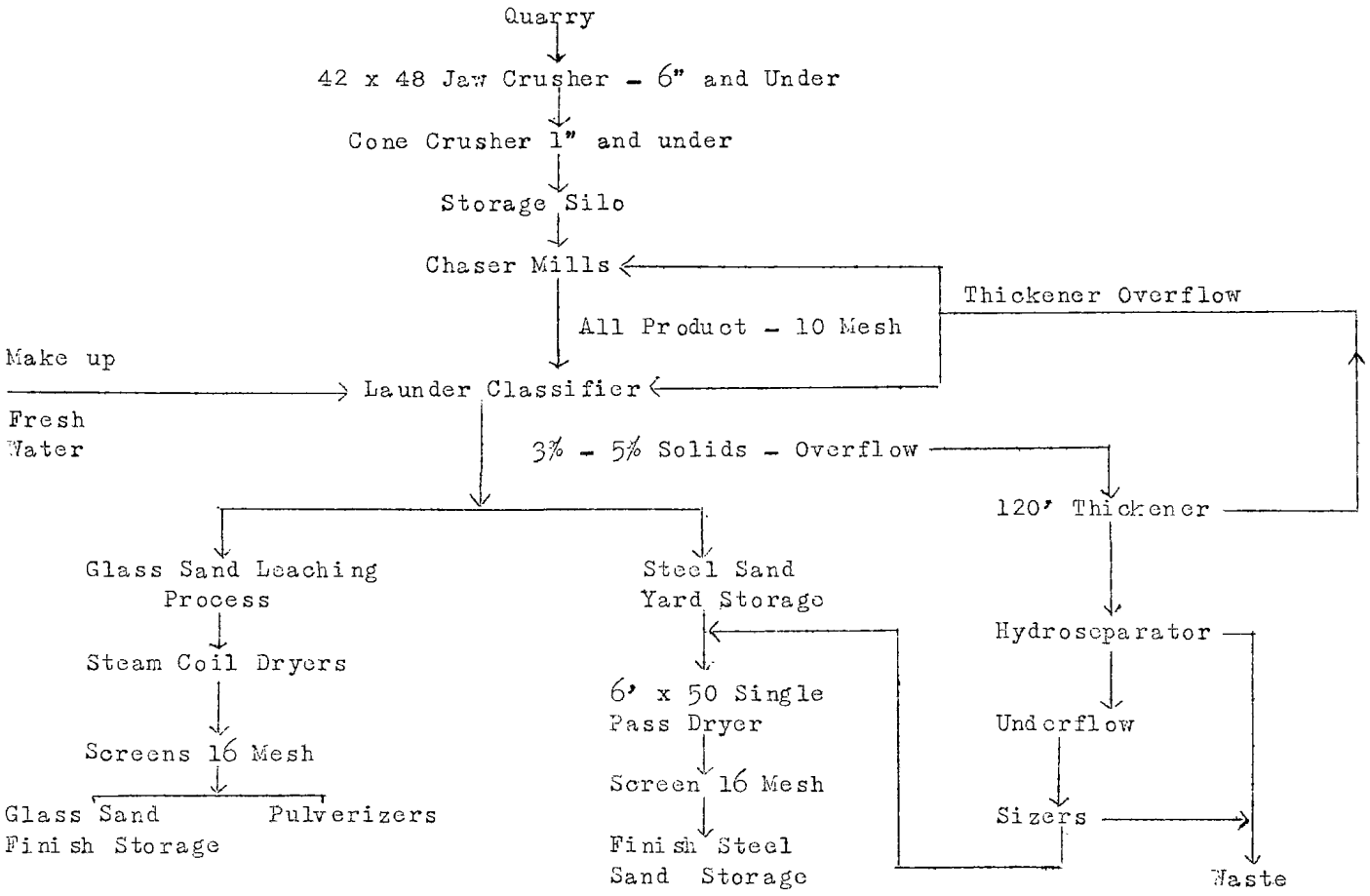
CENTRAL SILICA COMPANY PLANT AT GLASSROCK

See Flow Sheet, page 5.

CENTRAL SILICA COMPANY PLANT TO JONATHON CREEK GORGE

Bedrock exposures and boulders

Outcrops east of Glassrock along Jonathon Creek valley are the Vinton sandstone and shale. The abundant sandstone boulders of various sizes on



Flow Sheet of Silica Sand Operations at Central Silica Company Plant, Glass Rock, Ohio

Published in ROCK PRODUCTS magazine, September, 1948

the hillsides are Massillon. Note that these boulders are more abundant on west-facing slopes, i.e. on the "scarp" slope, since the dip of the beds is east-southeast. Cross-bedding is much more evident in these weathered boulders than it is in fresh exposures.

Putnam Hill limestone

In Madison Township, sec.10, the Putnam Hill limestone, about a foot thick, is exposed in the north road bank at an elevation of 980 feet. (The limestone can be located on the map at the approximate position of the Pottsville, Allegheny boundary)

LUNCH

Pre-Illinoian drainage divide

Note the barned tributaries of Jonathon Creek in Madison Twp. One is Turkey Run (southern Madison Twp.) and another is the unnamed stream entering Jonathon Creek from the northeast in E½ sec.17. Then note the unbarbed tributaries on the north in secs. 15, Madison Twp., and sec. 14, Newton Twp., Muskingum County. The Illinoian drainage divide, which once separated eastward and westward-flowing streams was in secs. 15 and 22, Madison Twp., where the 200-foot gorge is at present. Prior to the Illinoian ice advance, "Jonathon Creek" flowed westward, but as the advancing ice blocked the stream its waters were ponded and rose until they overflowed to the east over the divide. The reversed stream cut down rapidly to form the gorge through which Jonathon Creek now flows.

Stratigraphic section at Jonathon Creek gorge (S½ NE¼ sec.15 Madison Twp., and the NW¼SW¼ sec. 14, Newton Twp., Muskingum County)

	Ft.	in.
Pennsylvanian System		
Allegheny Series		
Clarion cyclothem		
52. Shale, CLARION, sandy, contains scattered ironstone kidneys with average thickness of 1 foot	18	6
Brookville cyclothem		
51. Limestone, PUTNAM HILL, light bluish gray, dense, weathers with "hour-glass" structure .	1	6
Shale, HOMEWOOD (38'6")		
50. Shale, dark bluish gray	26	10
49. Siderite, weathered somewhat to limonite,	0	2
48. Shale, dark bluish gray	3	0
47. Shale, gray, with scattered ironstone nodules becoming more numerous upward,	8	6

(continued)

	Ft.	in.
Pottsville Series		
Tionesta (?) cyclothem		
46. Covered	17	4
45. Shale, clayey	2	0
Bedford cyclothem		
44. Siderite, BIG RED BLOCK, grayish-brown; thickness variable	0	4
Limestone and shale, UPPER MERCER (1'9")		
43. Limestone, bluish gray, thin-bedded, fossiliferous	1	2
42. Shale, gray, clayey, poorly exposed	0	7
Coal, BEDFORD (1'6")		
41. Coal, bright, blocky	0	5
40. Shale, black, carbonaceous	0	3
39. Coal, bright, blocky	0	10
38. Clay, BEDFORD, plastic	8	3
Sandstone and shale, BEDFORD (10'4")		
37. Sandstone, gray to buff, medium-grained	4	4
36. Shale, gray	2	10
35. Sandstone, hard, micaceous, somewhat calcareous	0	2
34. Shale, clayey	1	3
33. Clay, gray, plastic	0	9
32. Shale, dark gray	1	0
Middle Mercer cyclothem		
Limestone, LOWER MERCER (12'6")		
31. Limestone, dark gray, dense, breaks with conchoidal fracture	1	0
30. Shale, dark bluish gray, calcareous, fossiliferous	9	6
29. Limestone, bluish gray, dense, fossiliferous; makes waterfall	2	0
Coal, MIDDLE MERCER (0'7")		
28. Coal, shaly	0	4
27. Coal, bright, blocky	0	3
26. Clay, MIDDLE MERCER, sandy	6	2
Flint Ridge cyclothem		
25. Coal, FLINT RIDGE, bright, blocky	0	3
24. Clay, FLINT RIDGE, gray, plastic, somewhat siliceous	4	0
Sandstone and shale, FLINT RIDGE (18'0")		
23. Sandstone, medium-grained, irregularly bedded	5	6
22. Shale, gray, sandy	10	3
21. Siderite, with weathering rim of limonite	0	3
20. Shale, gray	1	0
19. Sandstone, light gray, medium-grained, with black plant impressions	1	0

(continued)

	Ft.	in.
Lower Mercer cyclothem		
"Coal horizon", LOWER MERCER (1'6")		
18. Clay, gray, somewhat plastic	1	0
17. Shale, dark, carbonaceous	0	6
16. Clay, LOWER MERCER, plastic	3	0
Shale, LOWER MERCER (39'9")		
15. Shale, dark gray, poorly exposed	4	0
14. Shale, buff	5	6
13. Shale, contains numerous ferruginous limestone nodules	1	0
12. Shale, buff to gray	18	3
11. Covered	9	9
10. Shale, BEAR RUN "coal", black, coaly	0	3
Shale, MASSILLON (5'0")		
9. Shale, gray; with interbedded medium-grained sandstone; contains carbonaceous plant fragments	2	0
8. Shale, dark; with numerous 1-inch clay-ironstone nodules	1	6
7. Shale, buff	1	6
Quakertown cyclothem		
6. Shale, QUAKERTOWN, "coal", dark gray, carbonaceous, fissile	3	0
5. Covered	12	6
Probable Disconformity		
Mississippian System		
Meramec (?) Series		
Maxville formation		
Limestone, MAXVILLE (25'6")		
4. Limestone, gray, crystalline, very fossiliferous	0	5
3. Shale, gray, poorly exposed	1	0
2. Limestone, buff, somewhat crystalline .	9	4
1. Limestone, buff, dense, ferrugineous; in 6-inch beds	14	9
Elevation, 765 feet		

JOHATHON CREEK GORGE TO MILLIGAN

Oil and gas fields

Nearly all the oil and gas produced in Perry County occurs in either the Clinton sandstone or the Berea sandstone. The Clinton lies at a depth of about 3000 feet and averages 25 feet in thickness. The Berea ranges from 15 to 35 feet in thickness and lies about 1800 feet below the surface.

The map on page 9 shows the distribution of oil and gas fields, and the cross-section on page 10 shows the dip and thickening of various subsurface units. Both the map and cross-section were prepared in collaboration with Robert L. Alkire of the Geological Survey of Ohio.

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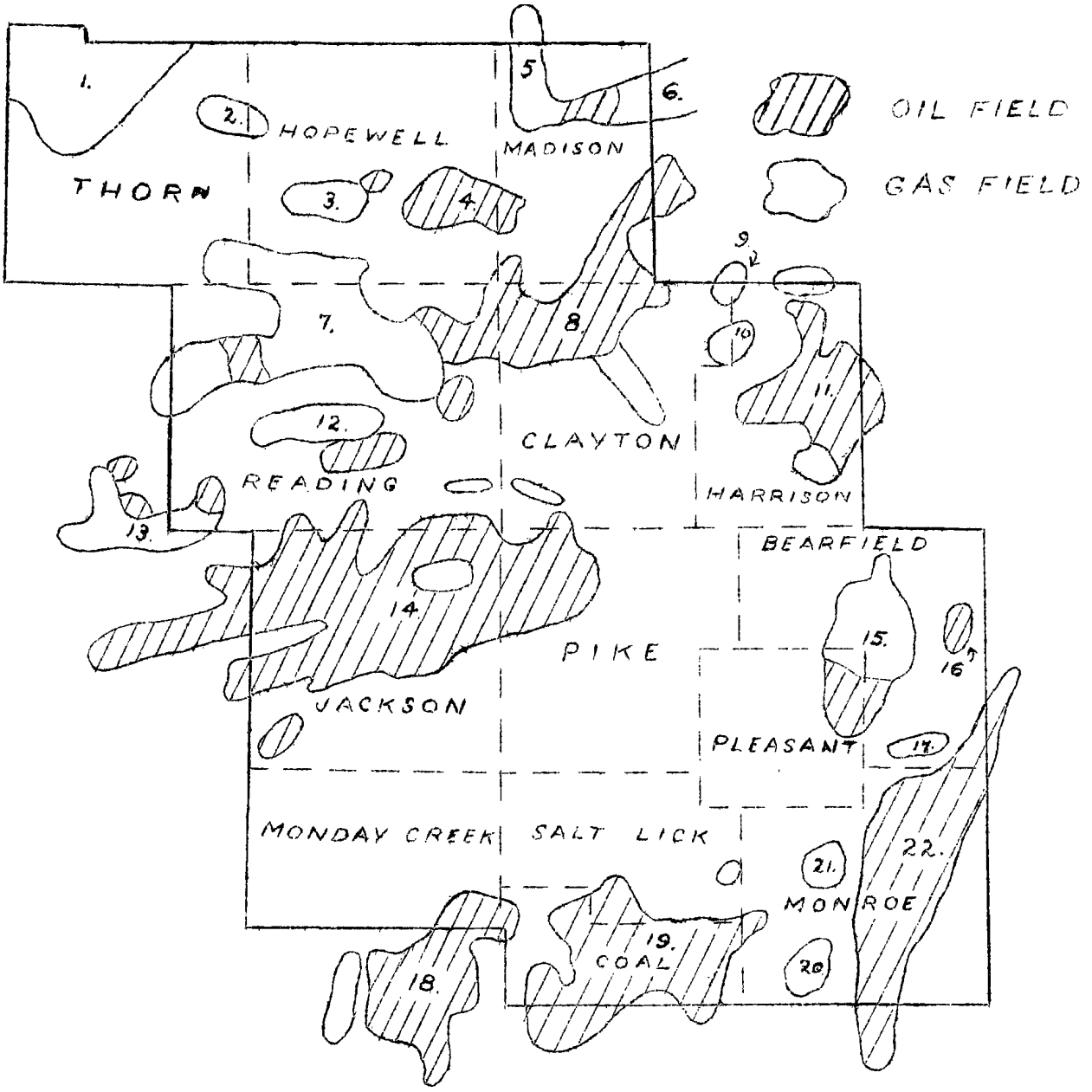
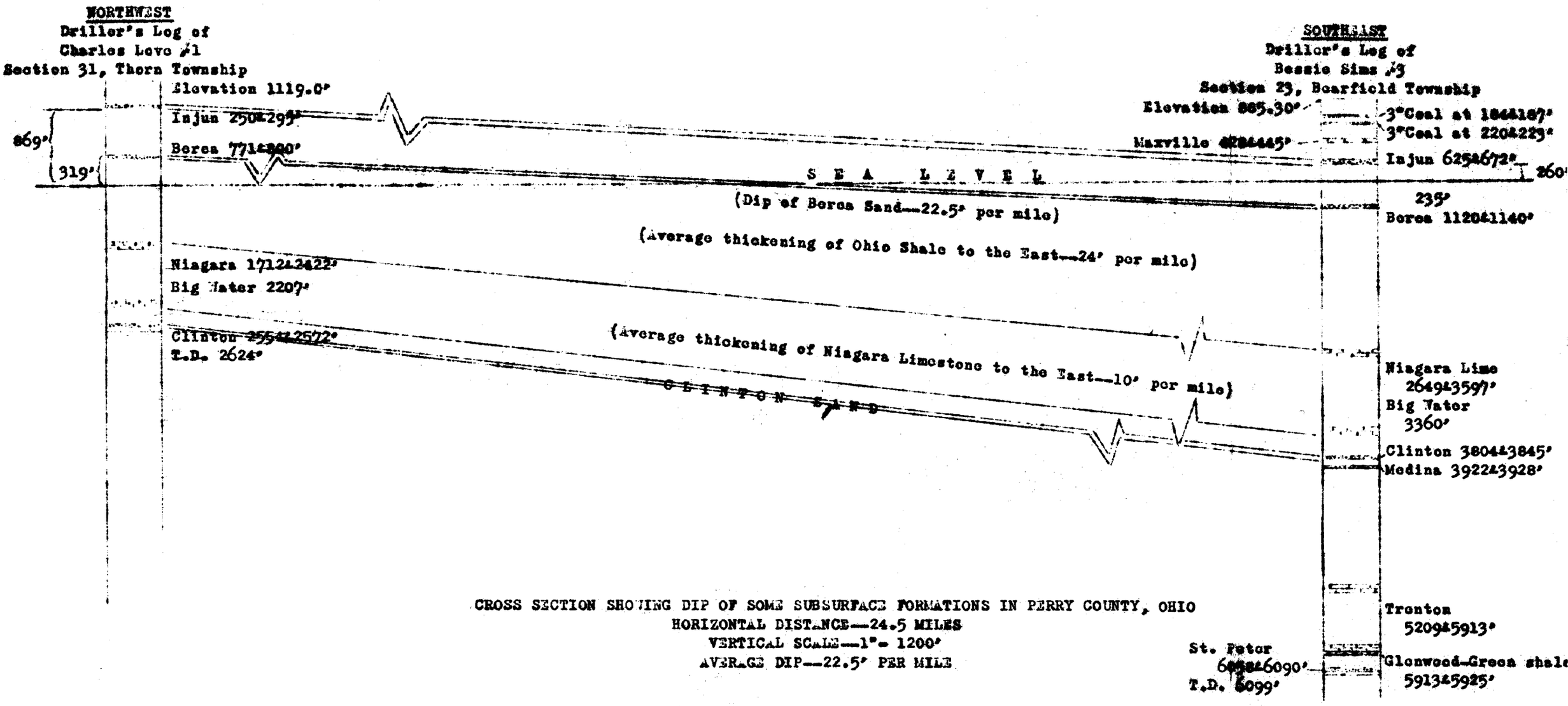
MAP SHOWING LOCATION OF OIL AND GAS FIELDS IN PERRY COUNTY, OHIO



NAMES OF FIELDS AND PRODUCING SANDS

1. Thornville (Clinton)
2. Thorn (Clinton)
3. Pherson (Clinton)
4. Bosserman (Berea)
5. Mt. Perry (Clinton)
6. Fultonham (Clinton)
7. Somerset (Clinton)
8. Clayton (Clinton)
9. Buckeye Fork (Clinton)
10. Saltillo (Clinton)
11. Crooksville (Clinton)
12. South Somerset (Clinton and Berea)
13. Rushville (Clinton and Berea)
14. Junction City-New Lexington (Clinton)
15. Sayre (Berea)
16. Portersville (Berea)
17. Rendville (Berea)
18. Bore (Clinton)
19. New Straitsville (Clinton and Berea)
20. Johnson Run (Berea)
21. Drakes (Berea)
22. Corning (Berea)



CROSS SECTION SHOWING DIP OF SOME SUBSURFACE FORMATIONS IN PERRY COUNTY, OHIO
HORIZONTAL DISTANCE—24.5 MILES
VERTICAL SCALE—1"= 1200'
AVERAGE DIP—22.5' PER MILE

Bedrock exposures between Mt. Perry and Sego

There are good exposures of the Vinton sandstone and shale between Mt. Perry and Sego along the west side of Route 204.

Lower Mercer limestone exposure

One mile east of Sego, along Route 22, in the west road bank at the site of the coal-loading tipple, the Lower Mercer limestone (1'6") crops out. Below the limestone, there are 5 inches of Middle Mercer coal and several feet of light gray Middle Mercer clay.

Strip Mines

Both the Lower Kittanning (No.5) and the Middle Kittanning (No.6) coals are mined by the open pit method in southern Madison Twp. En route, the Middle Kittanning coal can be seen exposed high up in the stripped banks. The Lower Kittanning lies about 25 feet below and is present in the bottom of the pits.

Potteries at Crooksville

At Crooksville, and also at Roseville to the north, there are several potteries where stoneware of many varieties is made. Local clays used as raw material are the Tionesta and Lower Kittanning which, because of their stratigraphic position, are known as the "bottom" clay and "top" clay, respectively. The A.E.Hull plant can be seen from the cars at the eastern edge of Crooksville.

Stratigraphic section at Milligan

	Ft.	in.
Pennsylvanian System		
Conemaugh Series		
Wilgus cyclothem		
Shale, BUFFALO (13'4")		
30. Shale, grayish green, clayey	2	0
29. Shale, dull brick red, clayey	3	0
28. Shale, dull green, clayey	1	3
27. Shale, dull green, silty	7	1
Brush Creek cyclothem		
26. Limestone, BRUSH CREEK, tan to gray, finely crystalline, fossiliferous, flinty, in 18-inch beds	7	8
25. Covered	28	0
Mason cyclothem		
24. Clay, MASON, gray, mottled green and purple, contains 6-inch ferruginous nodules at base . .	7	0
Sandstone, UPPER MAHONING (13'0")		
23. Sandstone, medium-grained, calcareous, firmly cemented	6	0
22. Sandstone, medium-grained, micaceous .	1	0

(continued)

	Ft.	in.
21. Sandstone, medium-grained, thin-to-medium-bedded, micaceous, firmly cemented	6	0
20. Covered	10	0
Mahoning cyclothem		
19. Clay, THORNTON, gray, plastic, siliceous	10	6
18. Sandstone, MAHONING "limestone", coarse-grained, micaceous, calcareous, becomes thin-bedded upward	2	3
17. Sandstone, LOWER MAHONING, coarse-grained, massive, micaceous, friable	44	3
16. Shale, sandy	5	0
Allegheny Series		
Upper Freeport cyclothem		
15. Shale, UNNAMED, black, carbonaceous, soft, fossiliferous, contains Lingula and Orbiculoidea	0	4
Coal, UPPER FREEPORT (2'8")		
14. Coal, weathered	0	8
13. Clay, dark, plastic	0	3
12. Coal, weathered	1	9
11. Clay, UPPER FREEPORT, sandy, ferruginous, plastic	8	9
10. Sandstone, UPPER FREEPORT "limestone"(?), brownish, medium-to coarse-grained, having calcareous bond	2	3
9. Shale, UPPER FREEPORT, sandy, with interbedded coarse-grained sandstone	25	1
Lower Freeport cyclothem		
8. Shale, LOWER FREEPORT "coal", dark gray to black, micaceous, somewhat carbonaceous; contains paper-thin bright coal streaks	0	8
7. Shale, LOWER FREEPORT, steel gray, sandy	13	10
Middle Kittanning cyclothem		
Coal, MIDDLE KITTANNING (5'6")		
6. Coal, shaly, thin-bedded, rejected	1	2
5. Clay shale, dark gray	0	1½
4. Coal, bright, blocky	1	4
3. Shale, dark gray	0	1½
2. Coal, bright, blocky	2	9
1. Clay, MIDDLE KITTANNING, somewhat plastic, base not seen	1	0

Elevation, 800 feet

MILLIGAN TO NEW LEXINGTON

Coal Mines

Many coal-mine entries can be seen along Routes 13 and 75 in driving toward New Lexington. These mines are all in the Middle Kittanning coal. Note that driving westward up the valley of Bear Creek, the mine entries occur at progressively higher elevations. This reveals the east southeast dip of the coal bed.

ACCOMMODATIONS AT NEW LEXINGTON

It is recommended that those remaining overnight stay at the Park Hotel near the center of town. The dining room of this hotel opens at 7:00 a.m. on Sunday, whereas most other restaurants are closed on Sunday morning.

SUNDAY, APRIL 24

MEETING PLACE

The field party will leave the Park Hotel at 8:30 a.m., Sunday. Anyone who is not at the hotel at that time may join the group at the Sunnyhill Coal Co. stripping operations at Rehoboth, 2 miles north of New Lexington. The party will probably be west of the highway, and will not leave this locality until about 9:30.

STRATIGRAPHIC SECTION AT SUNNYHILL COAL CO. STRIP MINE

(Measured in the SE¼ sec. 34, ~~Pike~~ Twp.)

	Ft.	in.
Pennsylvanian System		
Allegheny Series		
Lower Freeport cyclothem		
12. Shale, LOWER FREEPORT, gray, weathers buff, sandy	25	0
Middle Kittanning cyclothem		
Coal, MIDDLE KITTANNING (4'6")		
11. Coal, bright to bony	1	2
10. Shale, gray, with interbedded bright 1-inch coal layers	0	4
9. Coal, bright, blocky	1	0
8. Clay, gray, shaly	0	2
7. Coal, bright, blocky	1	10
6. Clay, MIDDLE KITTANNING, gray, somewhat sandy, ferruginous at base	10	0
Strasburg cyclothem		
5. Shale, STRASBURG "coal", dark, carbonaceous, clayey	0	2
4. Clay, OAK HILL, gray, sandy, contains scattered patches of flint clay	2	9
3. Shale, STRASBURG, gray, sandy; and interbedded medium-grained sandstone	15	6
Lower Kittanning cyclothem		
Coal, LOWER KITTANNING (4'6")		
2. Shale, black, carbonaceous, fissile; contains numerous well-preserved plant fossils	0	6
1. Coal, bright, with numerous paper-thin pyrite streaks	4	0

Elevation, undetermined but estimated at 960 feet.

SUNNYHILL STRIP MINES TO SAYRE

Conemaugh topography

Note, west of Sayre, in the Conemaugh rocks that there are numerous "knobs" on the skyline. Many of these are flat-topped and have rather steep sides with a definite break in slope on the flank. Most of the knobs are developed in the shale which lies between the Brush Creek and Ames limestones. It appears that the break in slope marks the position of a change from a rather clayey shale to a more sandy shale.

Brush Creek and Cambridge limestones (NW¼ sec. 23, Bearfield Twp.)

No section has been measured at this locality. The Brush Creek limestone is about 2 feet thick, and appears as a single bed. About 25 feet above the Brush Creek lies the Cambridge limestone which is represented by nodules of fossiliferous limestone embedded in variegated clay shale.

Stratigraphic section south of Sayre

	Ft.	in.
Pennsylvanian System		
Conemaugh Series		
Harlem and Barton cyclothems, undifferentiated		
7. Limestone, AMES, mottled greenish, gray and purplish, crystalline, fossiliferous	1	4
6. Clay shale, HARLEM, buff, partially covered . .	1	10
5. Clay shale,(?), brick red, containing scattered 2-inch hematite nodules	23	3
4. Shale, EWING, greenish, sandy, containing numerous 4-inch limestone nodules; nodules are greenish, ferruginous, and stained with manganese oxide	2	8
Sandstone and shale, COW RUN (54'1")		
3. Shale, greenish, silty to sandy	6	1
2. Sandstone, buff to tan, fine-to-medium-grained, in 1-foot beds; containing interbedded shale layers, base disconformable and calcareous	48	0
Anderson (?) cyclothem		
1. Shale, (?), buff, silty, thickness variable . . .	15	0

SAYRE TO PORTERSVILLE OUTCROP

Ames limestone

The Ames crops out in the road in the SW¼ sec. 23, Bearfield Twp., and again in the west road bank in central sec.34, Bearfield Twp. At both places the limestone is about 2 feet thick.

(continued)

Stratigraphic section at Portersville outcrop (cen.sec.3,Monroe Twp.)

	Ft.	in.
Pennsylvanian System		
Conemaugh Series		
Barton cyclothem		
Shale, COW RUN, (30'3")		
9. Shale, buff, sandy	18	6
8. Covered	9	0
7. Shale, gray, weathers in small chips	2	9
Anderson cyclothem		
6. Shale, PORTERSVILLE, dark gray to black, clayey, fossiliferous; contains fossiliferous limestone nodules averaging 4 inches in diameter	7	9
5. Coal, ANDERSON, bright to shaly, weathered	1	4
4. Clay, ANDERSON, gray, plastic	5	2
Wilgus cyclothem		
3. Clay shale, CAMBRIDGE "limestone", gray, containing grayish-green limestone nodules 3 inches in diameter	3	0
Clay shale, BUFFALO (20'0")		
2. Clay shale, gray to purplish, mottled	5	0
1. Clay shale, dull red and greenish	15	0

Elevation, 935 feet.

LUNCH

PORTERSVILLE OUTCROP TO CORNING

Coal mine at Rendville

The surface workings of the Rend-Mar Coal Company mine can be seen at Rendville. The Middle Kittanning coal, which is mined, lies about 50 feet below drainage. Note the gob pile west of the road. This pile is composed of bone coal or high-ash coal which is neither suitable for domestic use nor for most industrial use. The bone coal occurs in the top bench of the Middle Kittanning coal.

Stratigraphic section at Corning

	Ft.	in.
Pennsylvanian System		
Conemaugh Series		
Mahoning cyclothem		
7. Sandstone, LOWER MAHONING, light gray, coarse-grained, massive, micaceous, base disconformable	13	4
Upper Freeport cyclothem		
6. Zone of gray clay and interbedded coaly layers, UPPER FREEPORT "coal"	1	2

(continued)

	Ft.	in.
5. Clay, UPPER FREEPORT, gray, sandy, ferruginous, contains 2-inch limestone nodules	12	11
Limestone, UPPER FREEPORT (4'8")		
4. Limestone, greenish gray to purplish, dense, contains calcite veinlets, ferrugunous,	0	6
3. Clay, gray, plastic	0	4
2. Limestone, sandy; or sandstone, calcareous, ferruginous	3	10
Bolivar cyclothem		
1. Shale, UPPER FREEPORT, gray, very sandy . . .	9	8

Elevation, road level, 735 feet.

CORNING TO HEMLOCK

Upper Freeport coal strip mine

One mile southwest of Corning in N½ sec. 21, Monroe Twp., the Upper Freeport coal has been stripped. The coal is about 4 feet thick at this locality.

Jumbo "fault"

Just east of Hemlock note, on the geologic map, the dotted blue line at the horizon of the Middle Kittanning coal. In this region, the coal is replaced by sandstone, or in miner's terminology, it contains a "fault". The "fault" continues to the south into Coal Twp. and into Hocking County. The party will stop to inspect an exposure just west of the "fault" region, which shows massive Lower Freeport sandstone lying directly on the Middle Kittanning coal.

HEMLOCK TO MAXVILLE

Coal mines -- coal-mine fire

All coal mines, both strip and underground, between Hemlock and New Straitsville, are in the Middle Kittanning coal. At New Straitsville, this coal seam has been on fire at several places since the late 1800's.

Bessie Furnace remains

At the west edge of New Straitsville, the concrete pillars stand at the site of Bessie Furnace where iron was once made from local raw materials. These raw materials included the Ferriferous (Baird) ore, which ovelies the Vanport flint, the Maxville limestone as a flux, and the Middle Kittanning coal as fuel.

Massillon sandstone near Gore

The massive sandstone near road level in the vicinity of Gore, Hocking County, is Massillon.

(continued)

Stratigraphic section at Maxville limestone quarry
(type locality) Modified after W. Stout

	Ft.	in.
Pennsylvanian System		
Pottsville Series		
Huckleberry cyclothem		
12. Shale, HUCKLEBERRY, gray	20	0
Anthony cyclothem		
11. Coal smut, ANTHONY	0	3
10. Clay, SCIOTOVILLE, gray, plastic, sandy	2	1
Shale, ANTHONY (8'8")		
9. Shale, dark gray, fissile	2	2
8. Shale, dark gray	6	6
Harrison formation		
7. Ore	0	2
Probable Disconformity		
Mississippian System		
Meramec (?) Series		
Maxville formation		
Limestone, MAXVILLE (8'6")		
6. Shale, calcareous	0	6
5. Limestone, sandy, irregularly bedded	0	8
4. Limestone, dark gray, irregularly bedded, somewhat sandy	1	6
3. Limestone, light gray, dense, breaks with conchoidal fracture, in 3- to 9-inch beds	4	0
2. Limestone, ferruginous, irregularly bedded, brecciated	0	9
Probable Disconformity		
Osage Series		
Logan formation		
1. Sandstone and shale, VINTON	?	?

MAXVILLE TO JUNCTION CITY

Putnam Hill member

The party will stop to see the Putnam Hill member in the east road ditch, SW¼ sec. 14, Jackson Twp. At this locality the member is composed, not of limestone, but of ferruginous fossiliferous shale, 4 inches thick.

Illinoian glacial boundary

Note that the Illinoian glacial boundary is crossed at Clarksville (NE¼ sec. 15, Jackson Twp.). Weathered till is exposed at the crossroad in the village.

(continued)

Iron ore diggings

On the hill in the SE¼ sec. 10, Jackson Twp., southeast of the road, note where a bed of iron ore was stripped for use in a charcoal iron furnace. This ore is at the stratigraphic position of the Boggsmember.

Rush Creek Clay Company at Junction City (NW¼ NW¼ sec.10, Jackson Twp.)

At this plant, drain tile is made from clay and shale lying below the Lower Mercer limestone. The cut bank that can be seen from the highway exposes much of the lower Pottsville section below the Lower Mercer limestone. Middle Kittanning coal is used at the plant to fire the kilns.

JUNCTION CITY TO SOMERSET

Lower Mercer limestone

Two miles south of Somerset, near the top of the hill in the NW¼ sec. 22, Reading Twp., the Lower Mercer limestone is 3 feet thick and is well exposed in the east road bank.

Mississippian-Pennsylvanian contact

The party will stop to inspect an exposure of the Mississippian-Pennsylvanian contact 2 miles south of Somerset in the NW¼ sec. 22, Reading Twp. At this outcrop the Harrison formationis represented by silicified limestone which contains fossils in the form of pebbles, coal fragments, and quartz pebbles. The Massillon sandstone overlies the Harrison.

Boggs member

One mile south of Somerset, in the east road bank, NW¼ sec. 15, Reading Twp., the Boggs crops out at an elevation of 960 feet. It is 2½ feet thick and is composed of black, fossiliferous flint with a 9-inch layer of limestone at the base.

SOMERSET TO THORNPORT

Wisconsin glacial lakes and a drainage diversion

North and south of Redington (New Reading) there were, in Wisconsin time, 2 proglacial lakes (Reutinger, 1941), which were formed when the advancing Wisconsin ice dammed two westerly flowing streams. The lake north of Redington was the larger and it overflowed into the one south of Redington. Probably the southern lake drained to the south along the ice margin. The cutting of the gorge west of Redington was begun when the northern lake first spilled over into the southern and cutting continued after the wasting of the Wisconsin ice. Rush Creek is today still down-cutting at the gorge, across which the party will drive.

(continued)

Clay masses in lake sediments

Exposures in a stream bank in the SE¼ sec. 34, Thorn Twp., show 4 feet of light gray silty material which contains numerous dark gray elliptical clay masses. This exposure is near the edge of a glacial lake previously described. No satisfactory explanation can be offered for the origin of these clay masses.

Wisconsin terminal moraine

In secs. 3 and 10, east of Thornport, the knob-like hills form a part of the Wisconsin terminal moraine. The party will inspect this moraine in the NW¼ sec. 10. A gravel bank in this area reveals the nature of the morainic material.

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